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HYPHOLOMA AGGREGATUM AND H. DELINEATUM

EDWARD T. HARPER

(WITH PLATE 12)

Since I published the notes on the *Hypholoma lacrimabundum* group of Agarics in Trans. Wis. Acad. Sci. Arts and Letters, Vol. XVIII, p. 412, Prof. Beardslee of Asheville, N. C., has sent me specimens and photographs of two of Peck's species, *Hypholoma aggregatum* and *Hypholoma delineatum*, with the suggestion that the former is the same as *Hypholoma Storea* var. *caespitosum*, Cke. As this species is what Maire and others consider the true *Hypholoma lacrimabundum* of Fries and is at least a fine addition to my *Hypholoma lacrimabundum* group and as these specimens of *Hypholoma delineatum* clear up a doubtful point in my article I will publish a few notes on the species and also the photographs with the kind consent of Prof. Beardslee.

1. The identity of *Hypholoma aggregatum* Pk. and *Hypholoma Storea* var. *caespitosum* Cke.

I have never collected *Hypholoma aggregatum* but a comparison of Beardslee's specimens with *Hypholoma aggregatum* in Shear's N. Y. Fun. No. 13 and with *Hypholoma Storea* var. *caespitosum* in Jaap's exsiccati No. 143 shows that there is at least a very close relationship between the two forms. Beardslee's photograph accompanying this article is also very similar to W. G. Smith's illustration of *Hypholoma Storea* in the Jour. Bot., Vol 14, tab. 176. The latter represents the plant since determined as *Hypholoma Storea* var. *caespitosum*.

The species belongs to what I have called the *Hypholoma lacri-*

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mabundum group which now includes four or five well marked forms in the United States: the typical form illustrated in the Trans. Wis. Acad. Vol. XVII, pl. LXXVII, C, *Hypholoma echiniceps*, pl. LXXVIII, the present *H. Storea* var. *caespitosum*, the form called by Peck *H. aggregatum* var. *sericeum*, N. Y. State Mus. Bull. 54, p. 972, pl. 79, and the rugose form described as *H. delineatum*.

The characteristic mark of the group is the smooth purple-brown spores $3-5 \times 6-9 \mu$. Peck gives for *Hypholoma aggregatum* $3-5 \times 6-9 \mu$ and for var. *sericeum* $4 \times 7\frac{1}{2} \mu$. Beardslee's specimens agree with Peck's. Jaap gives for *Hypholoma Storea* var. *caespitosum* $4-4.5 \times 7.5-8 \mu$. Atkinson's measurements of the spores of *Hypholoma echiniceps* are $3.5-5 \times 7-9 \mu$. The spores of my specimens of this form agree, except that I found none over 8μ long. Typical *Hypholoma lacrimabundum* had spores $4-5 \times 7-8 \mu$ some of them shorter and broader, $5 \times 7 \mu$, and somewhat triangular, suggesting *Hypholoma populinum* Britz. as noted below. W. G. Smith says the spores of *Hypholoma Pseudostorea* are $2.5-3 \times 5-7 \mu$ and Plowright gives for *Hypholoma hypoxanthum* $4-5 \times 9-11 \mu$. These two species are considered synonyms of *Hypholoma Storea* var. *caespitosum* and show the extreme variations in the size of the spores provided that the reports of the measurements are accurate.

I have illustrated the spores of this group in pl. 12, C, which shows spores from typical *Hypholoma lacrimabundum*, *Hypholoma echiniceps* and *Hypholoma Storea* var. *caespitosum*. They are very different from the large tuberculate apiculate spores of all forms of the *Hypholoma velutinum* group which are shown in pl. 12, E.

All the forms in the group agree in their essential characters. The gills are dark, clouded, and with white, floccose edges. They are usually weeping, though scarcely at all so in *Hypholoma Storea* var. *caespitosum*. They become black with age. The surface of the pileus is innate fibrous and usually tears into tufts of fibers which are darker colored than the background. The stem is hollow and more or less scaly like the pileus. The gills are adnexed and the flesh is solid and whitish.

The forms differ in size, more or less caespitose habit, shade

of color and especially in the surface of the pileus. It is finely appressed-scaly in *Hypholoma lacrimabundum*, more coarsely squarrose in *H. echiniceps*, has fewer and larger patches of fibers in *H. Storea* var. *caespitosum*, is nearly smooth in *H. aggregatum* var. *sericcum*, and rugose in *H. delineatum*, if that species proves to belong to this group.

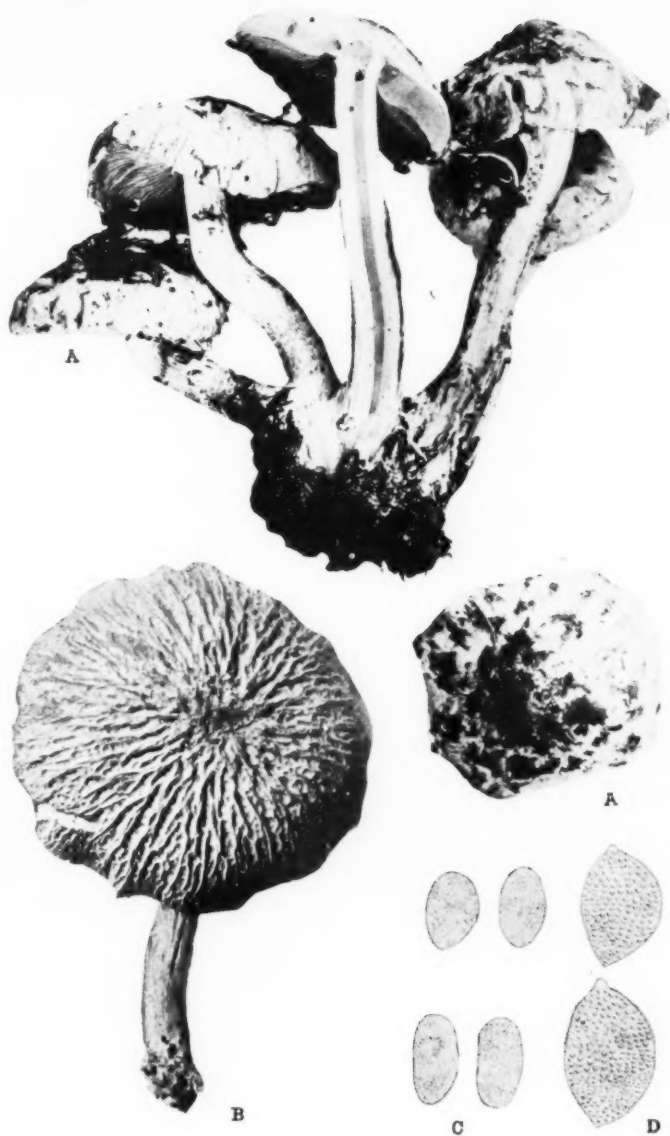
The variation in the group in Europe appears similar to that in this country. Plowright in the Trans. Brit. Myc. Soc. 1898, p. 45, considered *Hypholoma Storea* of Cooke's illustration 543 identical with *Hypholoma lacrimabundum* as illustrated in Fries' Icon. 134. W. G. Smith, however, in Jour. of Bot., 1903, p. 386, said that the gills of the former species do not weep and made it a new species *Hypholoma Pseudostorea*. He was followed by Rea in Trans. Brit. Myc. Soc., 1904, p. 65. Maire in the Bull. Soc. Myc. de France, 1911, pp. 41-42, supports Plowright's view and considers the weeping of the gills of little importance. Cooke did not admit that *Hypholoma lacrimabundum* and *Hypholoma Storea* var. *caespitosum* were the same species. If we compare the illustrations of Fries and Cooke with our plants and remember that Peck does not report the gills of *Hypholoma aggregatum* as weeping we conclude that about the same difference exists between the forms in the group in Europe as in this country. Some are larger and less caespitose with the pileus finely scaly and some are more densely caespitose with the pileus coarsely scaly. The former are typical *Hypholoma lacrimabundum* and the latter *Hypholoma Storea* var. *caespitosum* of Cke or *Hypholoma aggregatum* of Peck. A further hint of agreement between our forms in the group and those in Europe is the triangular shape of some of the spores in typical *Hypholoma lacrimabundum* which Maire has also noted and which he says is the only distinction between *Hypholoma lacrimabundum* and *Hypholoma populinum* Britz. The relation of species like *Hypholoma silvestre* Gill. and of *Hypholoma Storea* itself to the group needs further investigation.

The desirability of placing all the forms of the group together is evident. Peck's assignment of *Hypholoma aggregatum* to the section *Flocculosa* while *Hypholoma lacrimabundum* is placed in the section *Volutina* is most misleading. On the other hand, Maire's bunching all the forms together as one species loses sight of im-

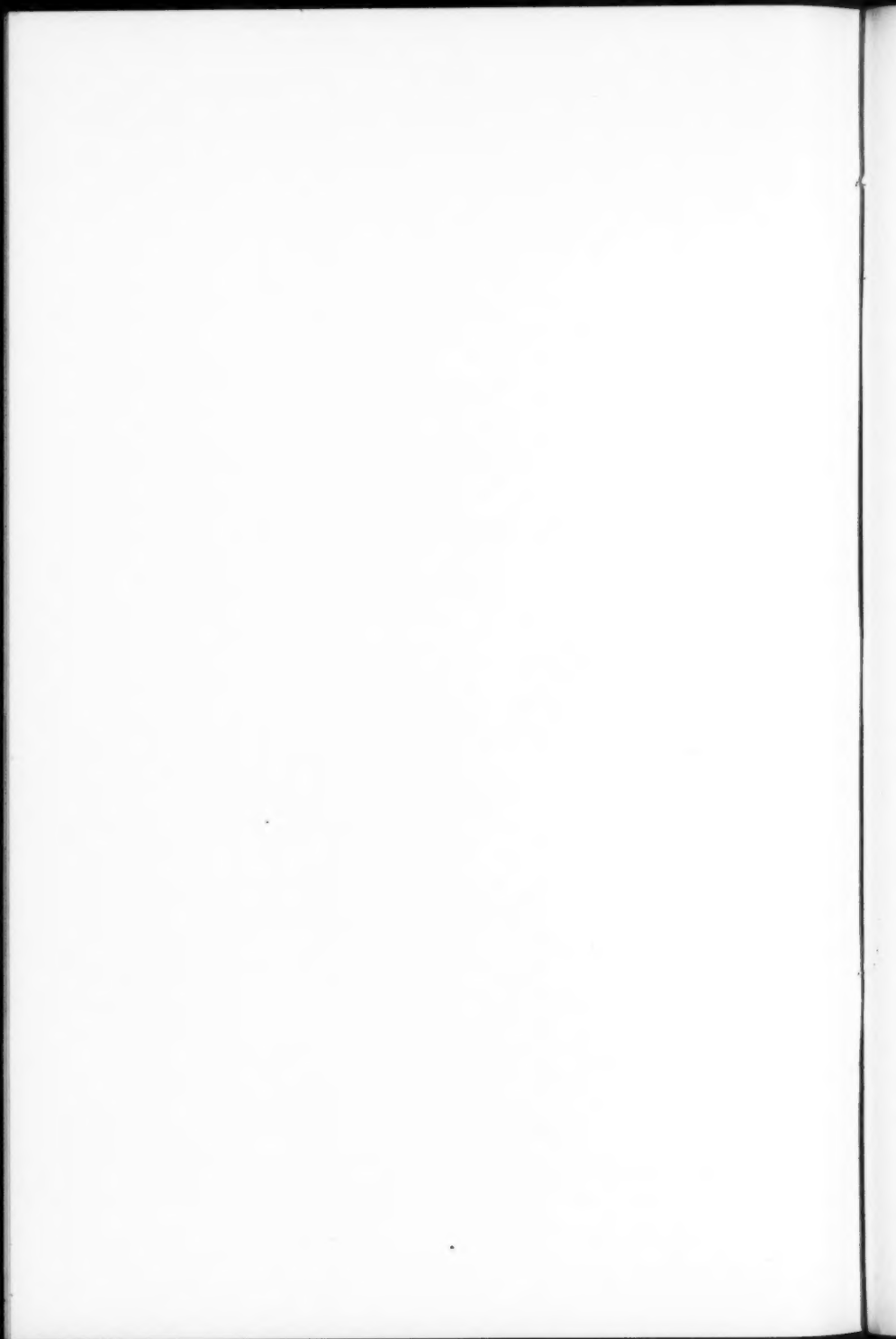
portant distinctions which are of great use in comparing the floras of different countries and habitats and in understanding the variability of the groups. A proper arrangement should recognize the fact that plants exist in varying groups, each containing a multitude of forms due to many different causes and that the groups are separated by gaps which have arisen in various ways during the history of development.

2. *Hypholoma delineatum* Pk. There appears to be no doubt that Beardslee's specimens, one of which is shown in pl. 12, B, are *Hypholoma delineatum* Pk. They are true species of *Hypholoma* with dark purple-black spores and fragments of the veil about the margin of the pileus. They confirm my opinion in note 2 on p. 413 of the article quoted above that the plant illustrated in Plate XXI is not a *Hypholoma* but probably belongs to the *Pholiota erebia* group and they also suggest that Peck's *Hypholoma delineatum* is a form of the *H. lacrimabundum* group. The spores are the same size and shape as those in the *H. lacrimabundum* group, Plate 12, C. They measure $4-5 \times 7-8 \mu$ in Beardslee's specimens; Peck gives $4-6 \times 8-10 \mu$. Peck placed the species after *H. rugocephalum* because the pileus was rugose wrinkled. Forms with rugose wrinkled pilei and similar in general appearance occur in several groups. There is one in the *Pholiota erebia* group* illustrated in Trans. Wis. Acad., Vol. XVII, pl. LXXXIV, E. It occurs both in this country and in Europe; one in the *Hypholoma velutinum* group which Atkinson named *H. rugocephalum*, Trans. Wis. Acad., Vol. XVIII, pl. XX; and there is the typical form of the *Cortinarius corrugatus* group. The surface of the pileus in the last species is exactly like that of *H. delineatum* which Peck describes as "marked toward and on the margin even when dry with irregular radiating lines or ridges." But the color of the gills and the large tuberculate spores, $10-11 \times 12-14 \mu$, easily distinguish *Cortinarius corrugatus*.

Peck's description of *Hypholoma delineatum* is in the N. Y. State Mus. Bull. 150, pp. 83-84.



A. *HYPHEOLOMA AGGREGATUM* PECK
 B. *HYPHEOLOMA DELINEATUM* PECK
 C. SPORES OF *H. LACRIMABUNDUM* GROUP
 D. SPORES OF *H. VELUTINUM* GROUP



A NEW GENUS AND SPECIES OF THE COLLEMACEAE¹

BRUCE FINK

(WITH PLATE 13)

In 1912 and 1913 (1 and 2), Freda M. Bachman published two papers in which a new form of male reproductive tract and a peculiar behavior of the trichogyne were described. During the progress of Miss Bachman's investigations, the writer had her material under observation several times and was convinced that she was working on the classical *Collema pulposum* (Bern.) Ach., until the sexual reproductive tracts and their behavior had proved to be very different from those known to exist in that lichen (Cf. pl. 13, f. 1, 2, 3, and 4, with f. 5 and 6, with respect to size and manner of occurrence).

When we recall that, in these lichens imbedded in gelatinous *Nostoc* colonies, we see with the eye only the modified algal-host colonies in which the lichen lives and the fruit of the lichen, and that the apothecia and the spores are much alike in several different species of the Collemaceae, it does not seem strange that two lichens, perfectly distinct with respect to sex organs and their behavior, should have very similar apothecia and spores, and should produce very similar modifications of the algal-host colonies. But this does not justify placing plants with very different types of male reproductive tracts and corresponding difference in the behavior of the female reproductive tracts in the same genus and species.

During the years 1912 to 1915, when the writer and Miss C. Audrey Richards were at work on the Collemaceae of Ohio (3), Miss Richards, who was doing the microscopic work, found the peculiar male reproductive tracts several times in material which we had previously taken for *Collema pulposum* (Bernh.) Ach. The lichen just mentioned was also found frequently in the speci-

¹ Contributions from the Botanical Laboratory of Miami University.—XIV.

mens studied, and the similar effect produced on the algal host by the two lichens, together with their similarity with respect to apothecia and spores, led to the suspicion that the plants might after all belong to the same species, the internal spermatia being conidia, with which the trichogynes fused in some instances instead of with the spermatia produced in spermagonia. Though this possibility was kept in mind in the examination of material, in no instance were spermagonia and the free internal spermatia found on the same plants, or in plants belonging to the same collection.

Before studying the Ohio material, it had been ascertained that the material widely distributed by the writer from Fayette, Iowa, in 1894 and following years, as *Collema pulposum* (Bernh.) Ach. was not that lichen but the new and peculiar one studied first by Miss Bachman and described in the present paper. After working on the Ohio material, the specimens in the writer's herbarium were gone over with the result that the new plant was found from widely separate stations, extending from the Atlantic coast to areas west of the Mississippi River.

On account of the similar modification of the algal-host colony and the likeness with respect to apothecia and spores between the plant described below and certain species of *Collema*, especially *Collema pulposum* (Bernh.) Ach., one can never hope to make sure whether he has our plant or a *Collema*, without ascertaining the morphology of the male reproductive tract, and the behavior of both male and female reproductive tracts. In these respects it must be remembered that our plant has internal, much larger spermatia, not contained in spermagonia and that the trichogynes grow to the spermatia within the thallus; while in the *Collemae* the trichogyne extends above the surface of the thallus, and the much smaller spermatia escape from the superficial spermagonia and are carried to this exposed portion of the female reproductive tract.

Collemodes gen. nov.

Transforming the algal-host colonies into foliose bodies; thallus wholly mycelial, imbedded in the host colonies, and attached to the substratum by rhizoids; male reproductive organs not in

spermagonia, but occurring internally in groups of several individuals (pl. 13, f. 2, 3, and 4).

Collemodes Bachmanianum sp. nov.

Transforming the algal-host colony into a middle-sized, orbicular or irregular body, which is 1.4 to 7 cm. across and 375 to 850 mic. thick, and closely attached to the substratum, with entire or repand crenate, often imbricate lobes, which are olive varying toward blue or black and scarcely lighter below, the marginal ones often with strongly ascending or even erect borders, while the central ones are usually flat, and with the algal-host colonies more numerous toward the surfaces; thallus of variously disposed hyphae, more densely placed under and about the apothecia where they are straight or wavy and usually stand roughly perpendicular to the disk; rhizoids many and for most part disposed in groups at the various points of attachment to the substratum; ascogonia occurring singly or in groups of 2 to 4 from 100 to 160 mic. below the upper surface of the thallus, each ascogonium of 2 to 4 coils, which contain 6 to 12 cells (pl. 13, f. 1 and 4); the trichogynes passing in various directions (pl. 13, f. 1 and 4) usually toward groups of internal spermatia; spermatia commonly found in groups of 3 to 15, and 100 to 300 mic. below the upper surface of the thallus, the groups arranged on the sides or the ends of small and often irregular hyphae, the spermatium oblong-clavate, 6 to 14 mic. long and 2 to 3 mic. wide; apothecia many, adnate or sessile, scattered or thickly disposed over the central portion of the thallus, 0.5 to 4.5 mm. across; disk red-brown, concave or rarely becoming flat or slightly convex, surrounded by an entire or a rugose-crenate thalliod margin, which extends slightly above the disk; exciple thin, composed of interwoven hyphae, hyaline or light-brown; hypothecium hyaline to light-brown, composed of interwoven hyphae, 45 to 80 mic. thick; hymenium hyaline below to brown above, 135 to 165 mic. thick; asci cylindrico-clavate, 100 to 120 mic. long and 20 to 30 mic. wide; spores hyaline, ellipsoid, muriform, longitudinally 4 to 5-celled and transversely 1 to 2-celled, 8 in each ascus.

Examined from Iowa (Fink), Minnesota (Fink), Wisconsin

(Bachman), Ohio (Fink), Missouri (Russell), and New York (Burnham).

The writer is under obligations to his former pupil, Miss C. Audrey Richards, for the drawings which accompany this paper.

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2. **Bachman, Freda M.** The origin and development of the apothecium in *Collema pulposum* (Bornh.) Ach. *Archiv. Zellforsch.* **10**: 369-340. *pl.* 30-36. 1913.
3. **Fink, Bruce and Richards, C. Audrey.** The Ascomycetes of Ohio. II. The Collemaceae. *Ohio Biol. Surv.* **19**: 35-62. *pl.* 4-6. 1915.

EXPLANATION OF PLATE 13

Fig. 1. An archicarp of *Collemodes Bachmanianum*, the trichogyne of which extended roughly parallel with the surfaces of the thallus. $\times 580$.

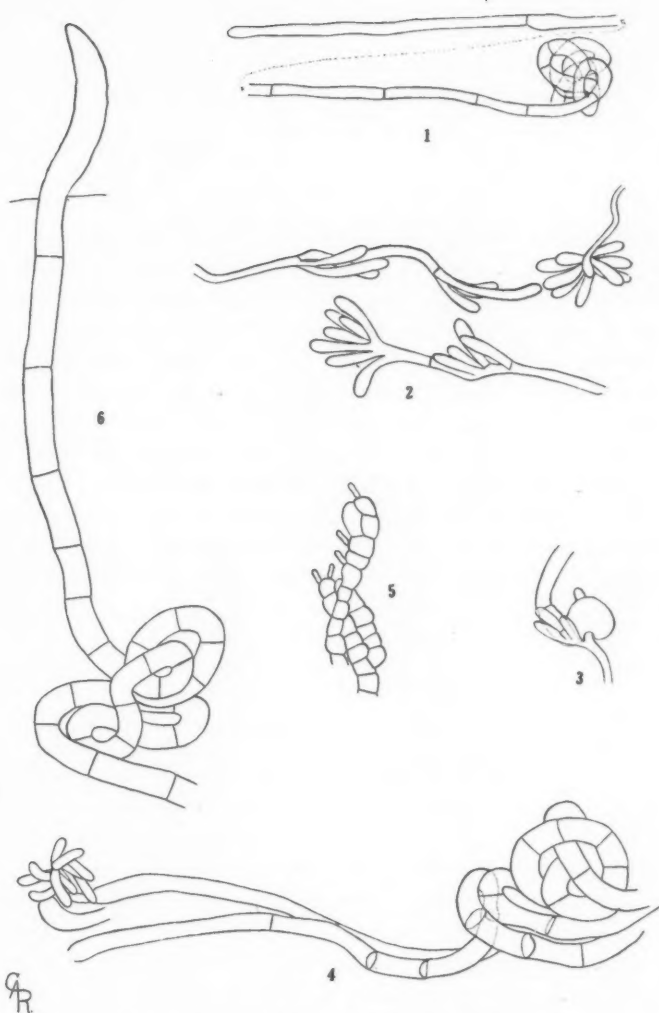
Fig. 2. Several groups of internal spermatia of *Collemodes Bachmanianum*, with the hyphae upon which they are borne. $\times 1,000$.

Fig. 3. A group of four internal spermatia of *Collemodes Bachmanianum* with the swollen tip of a trichogyne applied to one of them. $\times 1,000$.

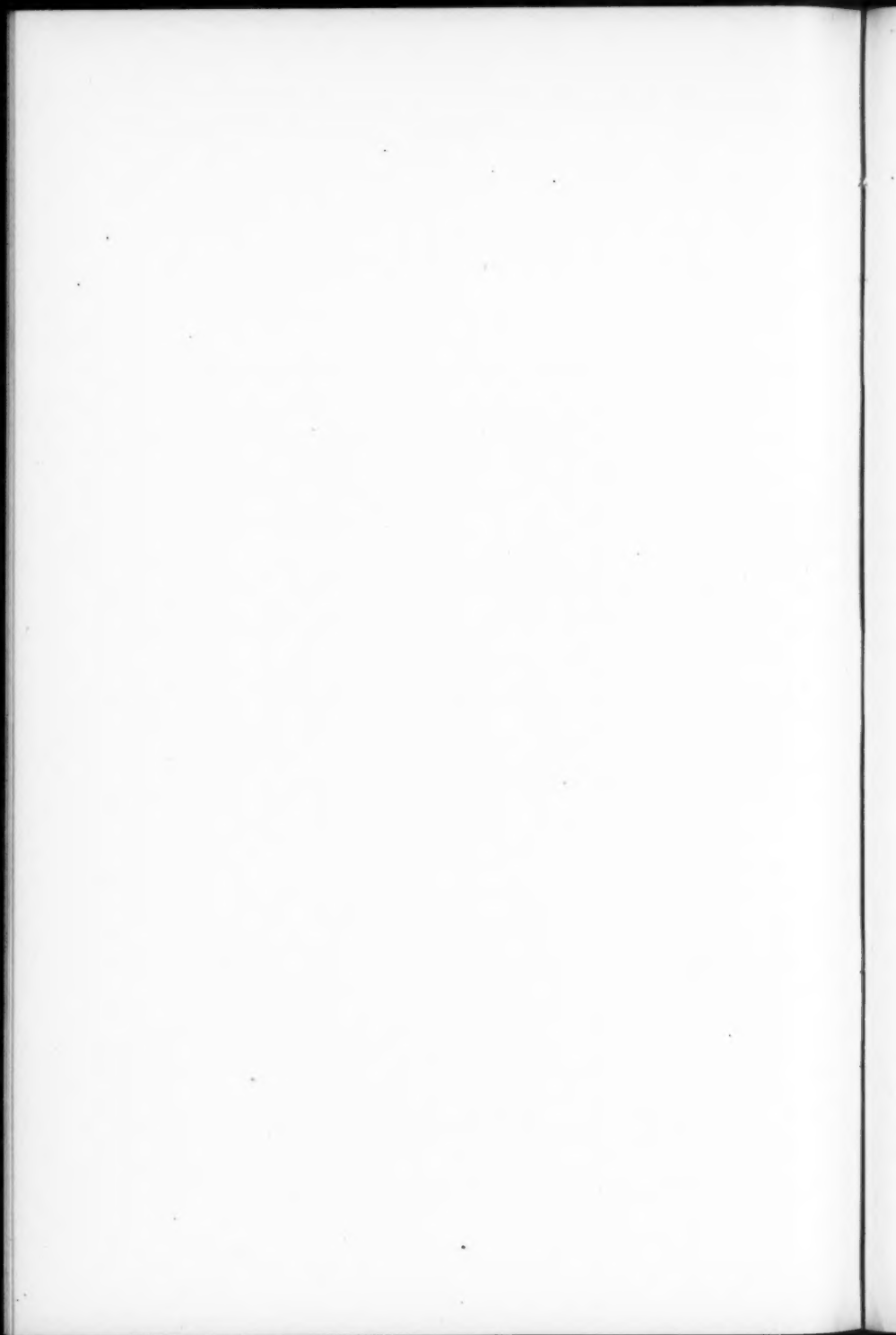
Fig. 4. Two ascogonia of *Collemodes Bachmanianum* at the right, and two trichogynes extending toward a group of internal spermatia. $\times 1,000$.

Fig. 5. Portions of three basidia of *Collema pulposum* with five spermatia attached. $\times 1,000$.

Fig. 6. An archicarp of *Collema pulposum*, the trichogyne of which extends above the thallus. $\times 1,000$.



FIGS. 1-4. COLLEMODES BACHMANIANUM FINK
FIGS. 5, 6. COLLEMA PULPOSUM (BERNH.) ACH.



NEW OR NOTEWORTHY ASCOMYCETES AND LOWER FUNGI FROM NEW MEXICO

CHARLES EDWARD FAIRMAN

The following notes are based upon a collection of microscopic fungi from New Mexico by Paul C. Standley. The specimens were mostly gathered by Mr. Standley in the vicinity of Ute Park, Colfax County, at an altitude of 2200 to 2900 meters during August and September, 1916. A few were collected at other places, especially at Baldy Peak, above timber line, at an altitude of 3600 meters. The details of the trip have been personally narrated by Mr. Standley in *Mycologia* 10: 34. The numbers in parenthesis are the collection numbers. Where no locality is mentioned in the text Ute Park is the place of collection. Prof. John Dearness has examined numbers 14253, 14565, 14754, 14772 and 14780, and the writer is deeply indebted to him for assistance.

ASCOMYCETES

Order: SPHAERIALES

Family: ERYSIACEAE

PHYLLACTINIA CORYLEA (Pers.) Karst.

On bare wood of dead branches of *Alnus tenuifolia* Nutt.
(14772 p.p.).

The occurrence of this fungus on bare wood is noteworthy. A severe infection of the leaves of trees by members of the Erysibaceae is often followed by an extension of the disease to surrounding objects. The writer has for several years noticed a tree of horsechestnut which is subject to annual attacks of *Uncinula flexuosa* Peck. Underneath this tree a species of *Corticium* upon fallen branches, and leaves of cultivated rhododendrons are found with a similar infection by contiguity.

On blackened areas around the base of branchlets there were a

few perithecia of a *Thyridium* with 5-6-septate, muriform ascospores, $24-26 \times 6-9 \mu$, evidently near *T. cingulatum*.

SPHAEROTHECA HUMULI (DC.) Burrill

On leaves of *Heuchera parvifolia* Nutt. (13803).

Family: SPHAERIACEAE

ALLANTOSPORAE

EUTYPELLA HERBICOLA E. & E.

On old stems of *Artemisia frigida* Willd. (14745) and *Atriplex canescens* (Pursh) Nutt. (14715).

Eutypella Brunaudiana Ribis-aurei var. nov.

Pseudostromata scattered or gregarious, base discoid or angular, seated on the inner bark, finally erumpent and girt by the ruptured epidermis, 1-4 mm. in diam., imperfectly circumscribed by a black line, and when maturely erumpent presenting a roughened black disc; perithecia 4-20, globose or angular, with very thick walls and a waxy, glistening, *Massaria*-like aspect upon section, $300-500 \mu$ in diam., black; ostiola short, obese, obtuse at the apex, roughening the disc; asci narrow, clavate, long-pedicellate, 8-spored, $75 \times 6.75-10 \mu$; spores 8, irregularly biseriate, allantoid, hyaline, $10-13.5 \times 3-4 \mu$, with a nucleus in each end.

On old branches of *Ribes aureum* Pursh (14736).

Diatrype Standleyi sp. nov.

Stromata scattered, at times coalescent, small, pulvinate or verruciform, 1-5 mm. in length, acute-ellipsoid or lanceolate, immersed, then erumpent, internally, at first, of a dirty-white tint, becoming rusty in spots and finally brown, externally roughened, black; perithecia 1-15, subcircinately or irregularly arranged, .25-.5 mm. in diam., walls thick, ostiola projecting, radiately cleft, roughening the disc; asci clavate, long stipitate, 8-spored, $70-125 \times 7-8 \mu$; spores allantoid, biseriate above, uniseriate toward the narrowing stipe, straight or curved, hyaline then yellowish, $10-13 \times 3-3.5 \mu$.

On dead branches of *Cercocarpus montanus* Raf. (13659 p.p. and 14789).

Externally this resembles *Diatrype cornuta* E. & E., but the stroma is differently tinted, and the asci and spores are larger.

DIATRYPE ALBOPRUINOSA (Schw.) C. & E.

On dead branches of *Acer neomexicanum* Greene (14683 p.p.) and on old scrub oak branches (*Quercus Fendleri* Liebm. ?) (13660 and 14693 p.p.).

DIATRYPELLA PLACENTA Rehm.

On dead branches of *Alnus tenuifolia* Nutt. (14771). Agrees with specimens in Rehm's Ascomyceten, No. 1984 and Tranzschel and Serebrianikow, Mycotheca Rossica, No. 225.

HYALOSPORAE

PHYSALOSPORA GALII Rostr.

Perithecia gregarious, single or 2-4 in a cluster, lenticular or globose-depressed, membranaceous and of loose cellular structure, surrounded at base by brown mycelial hyphae, often seated on yellow or brown discolored areas, immersed, then erumpent, opening by a central pore, black or brown, 100-200 μ in diam.; asci oblong, broad, rounded at both apex and base, 8-spored, 40-44 \times 10-13.33 μ ; spores obliquely biseriate or crowded, fusoid-oblong or cymbiform, mostly rounded at the ends, one end apt to be a little broader, simple, continuous, minutely granular or nucleolate, hyaline, 13-17 \times 3.33-6 μ ; paraphyses few, filiform.

On old stems of *Galium boreale* L. (14757 p.p.).

The broad asci differ from Rostrup's original description (Bidr. Ascom. Dovr. in Kristiana Videnskabs-Selskabs Forhandl. 9: 7. 1891. Accompanied by a *Phoma* and *Rhabdospora* too scanty for determination, and *Microdiplodia galiicola* sp. nov.

PHAEOSPORAE

ROSELLINIA PARASITICA E. & E.

On old stems of *Grossularia leptantha* (Gray) C. & B. (14674 p.p.).

ROSELLINIA PULVERACEA (Ehr.) Fckl.

On old log of *Populus angustifolia* James (13562 p.p.) and on *Quercus Fendleri* Liebm. (14722 p.p.).

ROSELLINIA ROSARUM Niessl

On dead branches of *Rosa* (14763 p.p.).

HYALODIDYMAE

MYCOSPHAERELLA IRIDIS (Awd.) Schröt.

On leaves of *Iris missouriensis* Nutt. (13615).

MYCOSPHAERELLA TINGENS Niessl?

On old leaves of *Arenaria Fendleri* Gray (14363 a).

Asci $67 \times 17 \mu$; sporidia oblong, rounded at the ends, uniseptate, one cell narrower, greenish hyaline, $24 \times 6-7 \mu$. The spores are larger than those in the description and the discolored spots on the leaves are rarely present.

MYCOSPHAERELLA PACHYASCA Rostr.

On old stems of *Agoseris* (13731) and on old leaves of *Mertensia caelestina* Nels. & Cockerell.

MYCOSPHAERELLA PRIMULAE (Auersw. & Heufl.) Schröt.

On old stems of *Androsace diffusa* Small (14174).

***Didymella nigrescens* Dearness & Fairman sp. nov.**

Perithecia black, shining on the summit, rather thickly scattered in the darkened surface of the decorticated branchlets, conoid or depressed-globose, base thin or almost disappearing, sunk in the unaltered wood, the ostiolum only, or up to half of the wall, erumpent, .25-.4 mm. in diam.; ostiola minute, round, often in an umbilicate depression; asci clavate-cylindric, obtuse at apex, short-stipitate, 8-spored, $65-90 \times 7-10 \mu$; paraphyses simple, abundant, longer than the asci; spores hyaline, inequilateral, oblong-fusoid, biseriate above, 1-septate, constricted, upper cell larger, sometimes a gutta in each cell, $10-13 \times 3.5-4.5 \mu$.

On old branches of *Symphoricarpos oreophilus* Gray (14754 p.p.).

DIDYMELLA NIGRIFICANS Karst.

On old branches of *Rosa* (14761).

Didymella Eurotiae sp. nov.

Perithecia scattered or gregarious, at first covered by the epidermis, becoming erumpent, finally adnate-superficial, globose, with minute papilliform ostiola, .3–3.5 mm. in diam., dull black; asci clavate-cylindric, rounded at the apices, long-stipitate, 8-spored, $133 \times 10 \mu$; spores oblong-fusoid, uniseptate, slightly constricted at the septum, obliquely uniseriate, each cell with a large nucleus, hyaline, $20-23 \times 6-7 \mu$.

On old branchlets of *Eurotia lanata* (Pursh) Moq. (14791 p.p.).

A *Pleospora* and a *Phoma* in small quantities are associated with the above.

Apiosporella cornina sp. nov.

Perithecia scattered or gregarious, depressed-globose or markedly flattened, at first covered by a thin layer of the epidermis, suberumpent, elevating the epidermis in minute pustules, black, $200-250 \mu$ in diam.; asci clavate-cylindric, short-stipitate, rounded at the apex, 8-spored, $40-50 \times 13-15 \mu$, surrounded by filiform paraphyses; spores irregularly biseriate, oblong-obovate, subrotund at the ends, uniseptate, the septum being formed about one third the way up from the base, not constricted, the upper cell twice as large as the lower, hyaline then golden-yellow, $20-23.33 \times 6.66-7 \mu$.

Differs from *Apiospora sepincoliformis* (DeNot.) Trav. in the spores, which are larger, with a subellipsoid but not cuneiform base, and with the septum formed farther from the end. In the generic name the writer follows von Höhnelt, who (Fragmente, VIII, No. 389), referring *Apiospora* to the *Dothidiales*, institutes the genus *Apiosporella* for *Apiosporae* without a stroma. Because the spores of *Apiosporella cornina* become yellow at maturity, those mycologists who do not refer to the hyaline-spored sections any fungus which has a more or less decided tint to the spores would, perhaps, refer our plant to *Phacoapiospora* Sacc. & Syd., a genus tentatively proposed in Sacc. Syll. XVI, 477. But von Höhnelt, loc. cit., considers the species described in the

Sylloge as *Phacoapiosporae* to be *Didymosphaeriae* with unequal spore cells.

CERIOSPORA DUBYI Niessl

On old stems of *Humulus americanus* Nutt. (14564 p.p.).
Host new.

CERIOSPORA MONTANIENSIS E. & E.

On old stems of *Clematis ligusticifolia* Nutt. (13679 p.p.).

MELANOPSAMMA POMIFORMIS (Pers.) Sacc.

On a log of *Populus angustifolia* James (13552).
This is the var. *minor* of Saccardo.

DIAPORTHE OLIGOCARPOIDES Rehm

Asci clavate-cylindric, rounded at the apex, short-stipitate, 8-spored, $73-80 \times 7-8 \mu$, paraphyses not seen; spores uniseriate, oblong-ellipsoid, uniseptate, not constricted, one or two oil-drops of varying magnitude in each cell, $10-12 \times 3.33-4 \mu$.

Differs slightly from the description in subcylindric, unconstricted and broader spores. Probably unreported from the United States. On old stems of *Rosa* (14761).

PHAEODIDYMAE

OTTHIA FRUTICOLA E. & E.

Otthia Clematidis Earle?

On old stems of *Clematis ligusticifolia* Nutt. (14565 p.p.).

PHAEOPHRAGMIAE

LEPTOSPHERA DUMETORUM Niessl

On old stems of *Ratibida columnifera* (Nutt.) Woot. & Standley (14742), on old stems of *Nuttalia Rusbyi* (Woot.) Cockerell (14770), on old stems of *Agrimonia striata* Michx. (14731), and on old stems of *Melilotus alba* Desr. (14783). Also on old stems of *Senecio scopulina* Greene (14583) with a *Rhabdospora* which may be connected with it presenting the following characteristics.

Pycnidia scattered or gregarious, immersed, becoming erumpent-superficial, centrally ostiolate, globose-depressed, black, 100–150 μ in diam.; spores filiform, straight or curved, simple, continuous, hyaline, about $27\text{--}30 \times .5\text{--}1 \mu$, *Rhabdospora dumetorum* sp. nov.

LEPTOSPHAERIA DOLIOLUM (Pers.) DeNot.

On old stems of *Helioopsis scabra* Dunal (13653).

Leptosphaeria nigricans Grindeliae var. nov.

Perithecia scattered or gregarious, on blackened areas on the stems, depressed-globose, finally collapsing, flattened, or sub-umbilicate, black, 250–300 μ in diam.; asci clavate-cylindric, rounded at the apex, short-stipitate, 8-spored, $70\text{--}100 \times 10 \mu$, surrounded by numerous filiform paraphyses; spores subbiseriate, 3–5-septate, slightly constricted at the middle septum, oblong-fusoid, hyaline at first, becoming yellow or greenish-yellow, $23\text{--}27 \times 3.33\text{--}4 \mu$.

Differs from *Leptosphaeria nigricans* Karst. (of which *Leptosphaeria tenera* Ellis is a small-spored form) in gregarious, collapsing perithecia.

LEPTOSPHAERIA OGILVIENSIS (B. & Br.) Ces. & DeNot.

On old stems of *Pericome caudata* Gray (14599), on old stems of *Machaeranthera Bigeloviae* (Gray) Greene (14739), and on old stems of *Delphinium robustum* Rydb. (13664).

LEPTOSPHAERIA PRAECLARA TYPHISEDA (Sacc. & Berl.) Berl.

On old stems of *Typha latifolia* L. (14746).

LEPTOSPHAERIA CULMIFRAGA MINUSCULA Rehm.

On old stems of *Elymus canadensis* L. Spores 6–8-septate, $30 \times 3.33 \mu$.

LEPTOSPHAERIA LUPINCOLA Earle, Pl. Bak. 2: 20. 1901

On old stems of *Lupinus ingratus* Greene. This is in limited quantity, for the most of this collection (14678) is a *Phoma* with

oblong, guttulate spores, $6 \times 1.5-2 \mu$, apparently different from *Phoma lupincola* Earle from Durango, Col. No. 14678 has, also, a few scattered perithecia of *Pleospora herbarum* (Pers.) Rabh., the typical form as noted by Earle, loc. cit., p. 22.

Leptosphaeria Quamoclidii sp. nov.

Perithecia scattered, globose or globose-conoid, with a minute papilliform ostium, black, $200-250 \mu$ in diam.; asci cylindric, rounded at the apex, short-stipitate, 8-spored, $80-100 \times 7 \mu$; spores overlapping uniseriate, oblong-fusoid, 3-septate, slightly constricted at the septa, 4-guttulate, $13-17 \times 6 \mu$, brown.

On old stems of *Quamoclidion multiflorum* Torr. (14790 p.p.).

Leptosphaeria Coleosanthi sp. nov.

Perithecia scattered, immersed, becoming erumpent-superficial, globose or globose-depressed, with a more or less elongated papilliform ostium, which as a rule just protrudes, black, $250-350 \mu$ in diam.; asci clavate-cylindric, varying from short to long-stipitate, 8-spored, $90-135 \times 10-12 \mu$; spores irregularly biseriate, fusoid, 3-5-septate, not markedly constricted, yellow or yellowish-brown, $40-50 \times 3.33-4 \mu$; paraphyses numerous, filiform.

On old stems of *Coleosanthus reniformis* (Gray) Rydb. (14597).

LEPTOSPHERIA HELIANTHI E. & E.

On *Helianthus Maximiliani* Schrad. Immature and doubtful (14659).

LEPTOSPHERIA RUBROINCTA E. & E.

Spores fusoid, curved, multiseptate, about $60 \times 4 \mu$, these dimensions agreeing with those of Berlese (Berlese, Ic. Fung. fasc. 2: 84 and tab. LXXVI, fig. 2), who says "et usque 60μ longa."

On *Ligusticum Porteri* C. & R. (14651).

Gibberidia arthropyma sp. nov.

Perithecia densely cespitose, erumpent through acutely ellipsoid clefts of the outer bark, globose, externally rugose, minutely

and centrally ostiolate, often somewhat umbilicate around the ostiola, dull-black, $250-300\mu$ in diam.; asci clavate-cylindric, rounded at the apex, short-stipitate, 8-spored, $100 \times 10-12\mu$; spores irregularly biseriate, very rarely uniseriate, oblong-fusoid, 4-septate, constricted more strongly at the third septum, the upper portion of the spore larger and trilocular, the lower bilocular, the third or middle cell markedly enlarged, straight or curved, obtuse at the ends, hyaline at first, finally yellow or pale-brown, $20-23 \times 7\mu$.

On old stems of *Chrysothamnus graveolens* (Nutt.) Greene (14782). Accompanied by a *Phoma* whose pycnidia are black, $150-250\mu$ in diam. filled with round or oblong, hyaline, nucleolate spores, $3.3-4.5 \times 3.3\mu$.

PHAEODICTYAE

PLEOSPORA BARDANAE Niessl

On *Isocoma heterophylla* (Gray) Greene, Bueyeros, Sept., 1916, Father A. Estrelt.

PLEOSPORA COMPOSITARUM Earle

On old stems of *Kuhnia rosmarinifolia* Vent. (14718).

Spores 6-7-septate, muriform, $20-23 \times 10\mu$. This is probably the small-spored form on *Compositae* noted by Earle (Pl. Bak. 2: 21) but it is doubtfully distinct, and may be *Pleospora herbarum* f. *microspora* Sacc.

PLEOSPORA HERBARUM (Pers.) Rabh.

On old leaves of *Arenaria Fendleri* Gray (14363 a), on old stems of *Chrysopsis hispida* (Hook.) Nutt. (14721), on *Lacinaria punctata* (Hook.) Kuntze (14793), on old stems of *Potentilla filipes* Rydb. collected at Baldy Peak (14368 a), on old stems of *Allionia linearia* Pursh (14788), and on old stems of *Lithospermum multiflorum* Torr. (14716). From Baldy Peak there were two collections of the large spored form, viz., on old leaves of *Trifolium nanum* Torr. (14325) with spores 6-7-septate, $36-40 \times 13.33\mu$ and on *Trifolium stenolobum* Rydb. (14328 a) with spores 7-9-septate, $30-40 \times 13-17\mu$.

PLEOSPORA COLORADENSIS E. & E.

On old stems of *Polemonium confertum* Gray (14159).

PLEOSPORA VULGATISSIMA Speg.

Asci clavate-cylindric, short-stipitate, 8-spored, $80-85 \times 20 \mu$; spores irregularly biseriata or crowded, constricted only at the middle septum, 3-7-septate, muriform, the upper part of the spore larger and more obtuse, yellowish-brown to dark-brown, $20-36 \times 10 \mu$.

On *Baccharis Wrightii* Gray (13801). Doubtfully distinct from some forms of *P. herbarum*.

PLEOSPORA VULGARIS Niessl

Pleospora Senecionis Earle (Pl. Bak. 2: 22) 1901, not *Pleospora Senecionis* Fckl., 1869 (Symb. Mycol., p. 136) which is *Metasphaeria Senecionis* Sacc. (*Leptosphaeria Senecionis* Wint.).

On old stems of *Senecio amplexans* Gray, Baldy Peak (14310 a).

PLEOSPORA INFECTORIA Fckl.

On old leaves of *Danthonia intermedia* Vasey, Baldy Peak (14312 p.p.). Berlese reduces the preceding species to this.

PLEOSPORA RUBICUNDA Niessl

On old stems of *Typha latifolia* L. (14746 p.p.).

CLATHROSPORA PERMUNDA (Cooke) Berl.

On *Sporobolus auriculatus* Vasey (13617), on *Lycurus phleoides* H.B.K. (15573) and *Allionia linearis* Pursh (14788 p.p.).

PYRENOPHORA CHRYSOSPORA POLARIS Karst.

On old stems of *Psoralea tenuiflora* Pursh (14786) and on old stems of *Mertensia caelestina* Nels. and Cockerell (14329 a, p.p.) from Baldy Peak.

PYRENOPHORA COMATA (Awd. & Niessl) Sacc.

On old stems of *Petalostemum oligophyllum* (Torr.) Rydb. (14719 p.p.). Associated with *Hendersonia Petalostemonis*.

***Pyrenophora Leucelenes* sp. nov.**

Perithecia black, minute, $100-150\mu$ in diam., scattered, immersed, becoming erumpent-superficial, globose, crowned with a few short, stout setae, brown at base, hyaline at tips, straight and rigid, $20-70\mu$ long and $3-4\mu$ broad; asci obovate, rounded at apex, short-stipitate, 8-spored, $80-85 \times 30-33\mu$; spores irregularly tristichous or conglobate, 6-7-septate, constricted at the middle septum, upper half of the spore more obtuse, the obtuse portion with bulging episporic wall from the middle septum up to the second septum from the middle, cells divided by 1-3 longitudinal septa, yellow at first, becoming dark-brown and finally opaque, $30 \times 13.33\mu$.

Distinguished by minute perithecia, short, broad asci and bulging-walled spores.

On stems and leaves of *Leucelene arenosa* Heller (13572). Accompanied by several deuteromycetes which may be stages of the development of the *Pyrenophora*. Inasmuch as these fungi imperfecti are so minute, and the leaves and stems of the host also, it was not practicable to separate them and all are included in one packet. It seems best, therefore, to describe them in this connection.

1. *Hendersonia Leucelenes* sp. nov.

Pycnidia scattered, globose-depressed, black, about 250μ in diam.; spores oblong, straight or curved, varying from obtuse to subacute at the ends, 3-septate, not markedly constricted, hyaline and nucleolate at first, becoming brown, $10-14 \times 4-6\mu$; basidia inconspicuous.

2. *Microdiplodia Leucelenes* sp. nov.

Pycnidia immersed or suberumpent, globose or globose-depressed, brown or blackish, 100μ in diam.; spores numerous, excluded in a mucous mass, oblong or ellipsoid, uniseptate, not constricted, ends rounded, $7-9 \times 3-4\mu$, brown, with basidia concealed by mucus.

3. PHOMA near P. HERBARIUM

Hab. of Nos. 1, 2, and 3, *Leucelene arenosa* Heller.

TEICHOSPORA RHOINA (Earle)

Strickeria rhoina Earle in Pl. Bak. 2: 16. 1901.

On old branches of *Schmaltzia Bakeri* Greene (14756).

Spores 5-7-septate, $23-30 \times 10 \mu$, muriform.

Teichospora rhyphodes, *Teichospora rhoina* and *Teichospora stenocarpa*, all found on *Rhus*, vary so little as to render it probable that they represent one species.

Teichospora Cercocarpi (Earle)

Strickeria Cercocarpi Earle, Pl. Bak. 2: 14.

On dead branches of *Cercocarpus montanus* Raf. (13659 p.p.).

TEICHOSPORA OBDUCENS (Fr.) Fekl.

On *Quercus Fendleri* Liebm. (14722).

TEICHOSPORA PYGMAEA E. & E.

On old log of *Populus angustifolia* James (13562).

CUCURBITARIA RIBIS Niessl

On old stems of *Grossularia leptantha* (Gray) C. & B. (14674), sparingly, also, on denuded places on branches of *Ribes aureum* Pursh (14736).

CUCURBITARIA ROSAE Wint. & Sacc.?

On dead branches of *Rosa* (14763 p.p.).

SCOLECOSPORAE

OPHIOBOLUS CLAVIGER Harkn.

On old stems of *Artemisia scouleriana* (Besser) Rydb. (14753).

OPHIOBOLUS COLLAPSUS Sacc. & Ellis

On old stems of *Verbena Macdougalii* Heller (13644).

Family: HYPOCREACEAE

SPERMOEDIA CLAVUS (DC.) Fr.

On *Agropyron Smithii* Rydb. (13749) and *Agropyron tenerum* Vasey (13747).

Family: DOTHIDEACEAE

PHYLLACHORA AMBROSIAE (B. & C.) Sacc.

Physalospora Ambrosiae E. & E., *Physalospora Arthuri* Sacc.

On leaves of *Helianthus Maximiliani* Schrad. (13565).

PHYLLACHORA TRIFOLII (Pers.) Fckl.

On *Trifolium Fendleri* Greene (13546), sterile.

PHYLLACHORA VULGATA Theiss. & Sydow

On *Muhlenbergia cuspidata* (Torr.) Rydb. (14079) and on *Muhlenbergia trifida* Hac. (14183).

Phyllachora Blepharoneuri sp. nov.

Stromata visible on both sides of the leaves, elongate, slightly arched, in the process of growth elevating the nerves of the leaves thereby forming an epistromatic ridge, the ridge often remaining as a persistent, undestroyed septum between the loculi, 1-3 mm. long, 1 mm. broad, black; loculi rounded, 2-10 or possibly more in a stroma; asci and paraphyses as in *P. graminis*; spores monostichous, ellipsoid, eguttulate, hyaline, $10 \times 6-7 \mu$.

On leaves of *Blepharoneuron tricholepis* (Torr.) Nash (13662).

EURYACHORA BETULINA (Fr.) Schr.?

On leaves of *Betula fontinalis* Sarg. (14662). Immature.

DOTHIDELLA INSCULPTA (Wallr.) Theiss. & Syd.

On old stems of *Clematis ligusticifolia* Nutt. (13679 p.p.).

Family: LOPHIOSTOMATACEAE

LOPHIOSTOMA QUADRINUCLEATUM Karst.

On old branches of *Ribes inebrians* Lindl. (14734) and on old stems of *Artemisia frigida* Willd. (14745).

PLATYSTOMUM COMPRESSUM (Pers.) Trev.

On old branches of *Ribes inebrians* Lindl. (14734 p.p.) and on old branches of *Salix cordata Watsoni* Bebb (14740). Also abundant on old branches of *Crataegus erythropoda* Ashe (14781).

LOPHIDIOPSIS NUCULOIDES (Rehm) Berl.

On old branches of *Symphoricarpos oreophilus* Gray (14754 p.p.). Only a few scattered perithecia found.

Family: HYSTERIACEAE

Hysterium Standleyanum sp. nov.

Perithecia scattered, rarely 2-3-seriate, erumpent-superficial, narrowly elliptic, lips closely connivent except in the middle somewhat open, black, .5-2 mm. long; asci clavate-cylindric, rounded at the apex, short-stipitate, 8-spored, $70-75 \times 10 \mu$; spores overlapping biseriate, oblong-fusoid, straight or curved, subobtuse at the ends, 4-7-septate, unstricted, the third or fourth superior cell globose, enlarged, each cell nucleolate when young, hyaline at first, becoming yellow or reddish-brown, $20-23 \times 3.33-4.5 \mu$.

Differs from *Hysterium Notarisianum* Rehm in narrower and longer spores, in the location of the enlarged cell, and in the absence of any occasional longitudinal septum in any of the cells.

On old scrub oak branches (*Quercus Fendleri* Liebm. ?) (14693).

HYSTEROGRAPHIUM BAKERI Earle

On old branches of *Cercocarpus montanus* Raf. (14789 p.p.).

LOPHODERMIIUM ARUNDINACEUM (Schrad.) Chev.

On *Koeleria cristata* (L.) Pers. (13591), on *Calamagrostis hyperborea americana* Vasey (13624) and on old leaves of *Danthonia intermedia* Vasey (14312 a, p.p.). The form on *Danthonia* is probably the var. *alpinum* of Rehm.

Order: PEZIZALES

LACHNELLA FLAMMEA (A. & S.) Fr.

Lachnella rhoina Earle Pl. Baker 2: 5, 1901.

On old branches of *Schmalzia Bakeri* Greene (14720, 14756 p.p.).

FABRAEA LITIGIOSA (R. & D.) Sacc. ?

On leaves of *Cyrtorhynca ranunculina* Nutt. (13982), not mature.

PSEUDOPEZIZA MEDICAGINIS (Lib.) Sacc.

On *Medicago sativa* L. (14444).

RHYTISMA SALICINUM (Pers.) Fr.

On leaves of *Salix Bebbiana* Sarg. (14661).

Patellea oreophila sp. nov.

Apothecia sessile, scattered over the surface of the bare wood, at first immersed in or embraced by the fibers of the wood, becoming erumpent-superficial, lecideiform, thinly margined, black, .5-1 mm. in diam.; asci clavate-cylindric, rounded at apex, short-stipitate, 8-spored, $60-80 \times 10-12 \mu$, iodine reaction negative; paraphyses numerous, filiform, not over $1-1.5 \mu$ broad, simple, rarely branching, wavy-flexuose, not apically enlarged; spores biseriate, fusoid, at times crescentic or falcate-sigmoid, subacute at the ends, uniseptate, the septum not always medial, not constricted, hyaline to pale-greenish, $27-30 \times 4-7 \mu$; excipulum brown.

On old decorticated branchlets of *Symphoricarpos oreophilus* Gray (14661 p.p.). No traces of lichen gonidia found.

SCHIZOXYLON INSIGNE (De Not.) Bres.

On old branches of *Crataegus erythropoda* Ashe (14781 p.p.) Only a few scattered ascomata found.

DEUTEROMYCETES

Order: SPHAEROPSIDALES

Family: PHYLLOSTICTACEAE

HYALOSPORAE

PHYLLOSTICTA CRATAEGI (Cooke) Sacc.

On *Crataegus erythropoda* Ashe (14563).

PHOMA ASCLEPIADEA E. & E.

On old stems of *Asclepias speciosa* Torr. (14730).

PHOMA ASTRAGALI Cooke & Hark.

On old stems of *Astragalus oreophilus* Rydb. (14663).

PHOMA COMPLANATA (Tode)

On old stems of *Hieracleum lanatum* Michx. (14640).

PHOMA CORNI-SUECIAE (Fr.)

On dead branches of *Cornus instolonca* A. Nels. (14780 p.p.).
Det. Dearness.

Phoma Estrelti sp. nov.

Pycnidia numerous, immersed, then erumpent, globose or globose-depressed, centrally ostiolate, black, about 300μ in diam.; spores numerous, oblong-elliptic, hyaline, $6-8 \times 3-4\mu$, basidia not observed.

On *Isocoma heterophylla* (Gray) Greene, Bueyeros, Sept., 1916, Father A. Estrelt.

PHOMA EXIGUA Desm.

On *Polygonum sawatchense* Small (14113), on old stems of *Comandra pallida* A.DC. (14769) and on old stems of *Eurotia lanata* (Pursh) Moq. (14791 p.p.).

PHOMA HERBARUM West.

On old stems of *Gaertneria acanthicarpa* (Hook.) Kuntze (14767), on old stems of *Aster Novae-Angliae* L. (14654), on old stems of *Agrimonia striata* Michx. (14731), on old stems of *Senecio spartioides* T. & G. (14738), on same host (14758), on dead stems of *Pedicularis fluviatilis* Heller (14486), and on stems of *Thermopsis Pinetorum* Greene (14744).

PHOMA HERBARUM MEDICAGINIS Rabh.

On dead stems of *Medicago sativa* L. (14759).

PHOMA HERBARUM SOLIDAGINIS Sacc.

On old stems of *Solidago Pitcheri* Nutt. (14743).

PHOMA OLERACEA Sacc.

On old stems of *Heliopsis scabra* Dunal (14648).

PHOMA RUDBECKIAE Fairman

On old stems of *Rudbeckia laciniata* L. Immature.

Phoma Sidalceae sp. nov.

Pycnidia scattered on whitened areas or gregarious on oblong black spots, globose or oblong, immersed then erumpent, black, $175-200 \times 140 \mu$; spores numerous, oblong or elliptic, rounded at the ends, simple, 2-3-nucleolate, hyaline, $4-7 \times 3-4 \mu$, with inconspicuous basidia.

On old stems of *Sidalcea ncomexicana* Gray (14251).

PHOMA THALICTRINA Sacc. & Malbr.

On old stems of *Thalictrum Fendleri* Engelm. (14652) and on *Thalictrum dasycarpum* F. & L. (14658).

MACROPHOMA CORNINA (Peck) Sacc.

On dead branches of *Cornus instolonca* A. Nels. (14780 p.p.).

Dothiorella phomopsis sp. nov.

Pycnidia immersed in a basal stroma and aggregated in groups of 1-5, often at the bottom of *Stictis*-like depressions, or occurring singly and without evident stroma, when occurring singly arranged in a subseriate manner between the longitudinal ribs of the stem and becoming erumpent-superficial, globose-depressed, of loose cellular structure, centrally ostiolate, contents white upon section, externally brown or black, $150-300 \mu$ in diam.; spores borne on stout basidia, numerous, oblong-ellipsoid, rounded at the ends, hyaline, eguttulate, $4-8 \times 3-4 \mu$.

On old stems of *Viorna Scottii* (Porter) Rydb. (14627).

This is an ancipital fungus, alternating between *Phoma* and *Dothiorella*.

Placosphaeria decipiens Dearness & Fairman sp. nov.

Stromata brown or dull black, subcircular, 1-3 mm. in diam., more frequently linear or effuse, on areas which are red at first; pycnidia black, sub-carbonaceous, hemispheric, 90-200 μ , one or mostly several in a linear series arising more than half their height above the basal stroma, normally 4-sulcate at top; conidia cylindric with rounded ends, hyaline, nucleate, $12-35 \times 4-6 \mu$, the longer ones sometimes seeming uniseptate.

On leaves, flower-bracts and stems of living *Aster vallicola* Greene, Ute Park, Colfax Co., Sept., 1916, Paul C. Standley, No. 14253.

The affected branchlets become completely darkened with the stromata,—very closely simulating *Dothidea* (*Ophiodothis* or *Phyllachora*) *Haydeni* B. & C. but lacking the shining luster of the latter as well as its depressed and serpentine perithecia. Specimens were sent to Dr. Geo. F. Atkinson who has (Jour. of Mycol. 11: 257) recorded the results of his examination of the specimens of *Dothidea Haydeni* from the Kew Herbarium. Atkinson says, in. litt., "The spores are larger than those of the type of *O. Haydeni* and also larger than those of F. Col. No. 1332. They are also different in shape according to my observations, that is, they are not attenuate at the ends." The feature of the longer spores being 2-celled or at least with the plasma divided was not observed in F. Col. No. 1332, nor in the type of *D. Haydeni*. In this respect the fungus on *Aster vallicola* approaches *Placosphaerella*.

PHAEOSPORAE

Coniothyrium sepium sp. nov.

Pycnidia scattered or gregarious, immersed then pustuliform-erumpent, subglobose or lenticular, thin-walled, fragile, apparently astomous, black (brown under the microscope) about 100-250 μ in diam.; basidia not seen; spores very numerous, rounded or ellipsoid, ends usually rounded, at times subacuminate or pseudo-apiculate at one end, cell walls thick and dark brown, cell contents light brown and minutely punctate, 1 or more guttulate, $6.66-10 \times 6.66 \mu$.

On old stems of *Convolvulus sepium* L. (14578).

Under examination with a B. & L. one-twelfth imm. lens the punctate appearance is seen to be due to minute granules in the substance of the spores.

Coniothyrium olivaceum Salsolae var. nov.

Pycnidia scattered or gregarious, seated on the inner bark, becoming erumpent-superficial, globose, with a central pore from $6-8\mu$ broad, black, $120-200\mu$ in diam.; spores rounded or ellipsoid, subhyaline, becoming smoky, $4-8 \times 4-5\mu$.

On old stems of *Salsola Pestifer* A. Nels. (14765 and 14221).

Coniothyrium olivaceum Thermopsisidis var. nov.

Pycnidia numerous, scattered, immersed, then erumpent and raising the epidermis in minute pustuliform elevations, globose or globose-depressed, $130-200\mu$ in diam.; spores numerous, rounded or ellipsoid, continuous, at first hyaline, becoming smoky-brown, darker in mass, $5-6 \times 3.33\mu$.

On old stems of *Thermopsis pinetorum* Greene (14744 p.p.).

CONIOTHYRIUM CONCENTRICUM YUCCAE-GLAUCAE Sacc.

On old stems of *Yucca glauca* Nutt. (14243 p.p.). Cfr. Brenckle, Fungi Dak. No. 428.

CONIOTHYRIUM MYRIOCARPUM (Fr.) Sacc.

On a log of *Populus angustifolia* James (13562 a) associated with *Rosellinia pulveracea* of which, sec. Fuckel, it is the pycnidial stage.

HYALODIDYMAE

Ascochyta Boutelouae sp. nov.

Pycnidia black, scattered and immersed in the substance of the leaves, becoming erumpent, depressed-globose, of thin membranaceous texture, round and about 55μ in diam., or oblong $90-150\mu$ in length, with a central ostium about 10μ broad; spores numerous, oblong-cylindric, obtusely rounded at the ends, 4-5-nucleolate at first, then uniseptate, slightly constricted, hyaline or greenish-hyaline, $17-20 \times 6-7\mu$.

On *Bouteloua gracilis* (H.B.K.) Lag. Distinct from *Ascochyta*

graminicola Sacc. in broader spores which are not attenuated at the ends. Standley (14256).

PHAEODIDYMAE

MICRODIPLODIA VICIAE Peck

On *Vicia americana* Muhl. (14176).

***Microdiplodia galiicola* sp. nov.**

Pycnidia scattered or gregarious, globose or globose-depressed, immersed in the inner bark, pustuliform-erumpent, or left exposed by the falling away of the epidermal layers of the cortex, dark-brown, $150\text{--}250\ \mu$ in diam.; basidia not seen; spores numerous, oblong or elliptic, rounded at the ends, uniseptate, slightly constricted at the septum, brown, $7\text{--}10 \times 3\text{--}4\ \mu$.

On old stems of *Galium boreale* L. (14757).

***Microdiplodia Anograe* sp. nov.**

Pycnidia scattered, globose, minute or punctiform, black, $130\text{--}150\ \mu$ in diam.; spores numerous, variable in form, oblong and rounded at the ends or oblong-fusoid and subacute at the ends, uniseptate, not markedly constricted, brown, $6\text{--}9 \times 3.5\ \mu$; basidia inconspicuous.

On old stems of *Anogra coronopifolia* (T. & G.) Britton (14768 p.p.). Associated with a *Mycosphaerella* which is close to *Mycosphaerella Oenotherae* (E. & E.) but in insufficient amount for determination.

***Ascochyta agropyrina* sp. nov.**

Pycnidia scattered or gregarious, erumpent, globose, black, $250\text{--}320\ \mu$ in diam.; spores oblong-cylindric, rounded at the ends, uniseptate, constricted at the septum, external cell walls often depressed-concave near the middle, at first hyaline, becoming yellow or greenish-yellow and finally pale-brown, nucleolate, $17\text{--}23 \times 6\ \mu$.

On old leaves of *Agropyron Bakeri* A. Nels. (14330 a, p.p.). Cfr. Diedicke on the genus *Ascochyta*, Ann. Mycol. 10: 141.

HYALOPHRAGMIAE

KELLERMANNIA SISYRINCHII E. & E.

On *Sisyrrinchium demissum* Greene (14092).

KELLERMANNIA YUCCAEGENA E. & E.

On old leaves of *Yucca glauca* Nutt. (14243).

STAGONOSPORA CHENOPODII Pk.

On *Chenopodium album* L. (14214).

STAGONOSPORA GRAMINELLA Sacc.

On *Sporobolus auriculatus* Vasey (13617).

Stagonospora Humuli-americanii sp. nov.

Pycnidia scattered or gregarious, immersed, becoming erumpent-superficial, depressed-globose, centrally ostiolate, brown or black, about one third of a millimeter in diam.; spores oblong-cylindric, rounded at the end, 1-3-septate, not constricted, mostly straight, hyaline, subhyaline in mass, $17-30 \times 3-4 \mu$.

On stems of *Humulus americanus* Nutt. (14564 p.p.).

PHAEOPHRAGMIAE

Hendersonia Stanleyellae sp. nov.

Pycnidia scattered or gregarious, subepidermal, depressed-globose, black, $150-175 \mu$ in diam.; spores ellipsoid, or fusoid-oblong, ends attenuated and subacute, 3-septate, not constricted, olivaceous or brown, $13-20 \times 6-7 \mu$.

On old stems of *Stanleyella Wrightii* (Gray) Rydb. (13516).

Hendersonia Eriogoni sp. nov.

Pycnidia scattered, immersed, then erumpent-superficial, conoid or globose, with minute, protruding, papilliform ostiola, black, $200-300 \mu$ in diam.; spores numerous, oblong, rounded at the ends, triseptate, not constricted, with a large gutta in each cell, light-brown at first, becoming dark-brown or sub-opaque, $13-17 \times 6.5 \mu$.

On old stems of *Eriogonum alatum* Torr. (14787).

Hendersonia Petalostemonis sp. nov.

Pycnidia immersed, then erumpent, scattered, globose or globose-depressed, with a flattened base and minute, cylindric, slightly projecting ostiola, black, 250μ in diam.; spores abundant, oblong-ellipsoid, rounded at the ends, somewhat variable in form, one end often larger, 3-septate, slightly constricted, brown, $10-13 \times 7-8\mu$.

On old stems of *Petalostemon oligophyllus* (Torr.) Rydb. (14719 p.p.).

Hendersonia subcultriformis sp. nov.

Pycnidia sparse, globose, at times with mycelial hairs surrounding the basal portion, centrally ostiolate or papillate, black, $250-300\mu$ in diam.; basidia short or inconspicuous; spores abundant, fusoid or subfalcate, rounded at one end, the other end subacuminate, sharply bent, coulter-shaped or subrostrate, 5-7-septate, each cell uniguttulate, hyaline becoming brown with age, $27-33 \times 6-7\mu$.

On old leaves of *Agropyron Bakeri* E. Nels. (14330 p.p.).

Differs from *Hendersonia crastophila* Sacc. in its rostrate, multi-guttulate spores, and from *Hendersonia Agropyri* Rostr. in differently shaped spores with more numerous septa.

HENDERSONIA FOLIORUM Fckl.

On old leaves of *Primula angustifolia* Torr. (14349 a).

Cryptostictis utensis sp. nov.

Pycnidia immersed, then erumpent, scattered, globose or oblong-elliptic, black, $250-500\mu$ in diam.; spores oblong-fusoid, $14-17 \times 3-4\mu$, 3-septate, 4-locular, the two middle cells larger, subglobose and brown, the end cells hyaline, acuminate and armed with a hyaline, straight or curved cilium from $10-20\mu$ in length; basidia long, club-shaped, and hyaline, enlarged at the apices.

On old stems of *Anogra coronopifolia* (T. & G.) Britton (14766). Name for Ute Park, the place of collection.

PHAEODICTYAE**CAMAROSPORIUM AMORPHAE** Sacc.

On old stems of *Amorpha canescens* Pursh (14615).

CAMAROSPORIUM COMPOSITARUM (C. & H.) Sacc.

On old stems of *Artemisia frigida* Willd. (14726).

Camarosporium Estrelti sp. nov.

Pycnidia immersed, becoming erumpent and exposed in rifts of the bark, flattened-globose, ostiola central and $40-50\mu$ broad, surrounded at the base by brown mycelial threads, black, $200-300\mu$ in diam.; spores oblong-elliptic, often irregular in form, abundant, 2-4-septate, slightly constricted, one or more of the cells with longitudinal septa, brown, $12-18 \times 6-8\mu$, borne on moderately long sporophores.

On *Isocoma heterophylla* (Gray) Greene, Bueyeros, Sept., 1916, Father A. Estrelt.

CAMAROSPORIUM PATAGONICUM Speg.

On old stems of *Atriplex canescens* (Pursh) Nutt. (14715).

Camarosporium yuccaesedum sp. nov.

Pycnidia scattered or gregarious, subepidermal, becoming erumpent-superficial, globose or conoid, black, at least 200μ in diam.; spores numerous, variable in shape, globose, oblong-elliptic or flask-shaped, usually rounded at the ends, occasionally truncate at one end, 3-5-septate, very slightly constricted at the septa, one or more of the cells with a longitudinal septum, light-brown to dark-brown, $20-30 \times 10-17\mu$, borne on stout, cylindric, hyaline basidia.

On dead leaves of *Yucca baccata* Torr. (13517).

SCOLECOSPORAE

SEPTORIA GAURINA E. & K.

On *Gaura induta* Woot. & Standl. (14519), on *Gaura parviflora*, Dougl. not numbered.

SEPTORIA HELIANTHI E. & K.

On leaves of *Helianthus annuus* L. (14467 a).

SEPTORIA OENOTHERAE West.

On leaves of *Lavauzia flava* A. Nels. (14439) and *Oenothera Hookeri* T. & G. (14580).

SEPTORIA SMILACINA E. & M.

On leaves of *Vagnera stellata* (L.) Greene (14264).

Rhabdospora gauracea sp. nov.

Pycnidia caulicolous, gregarious, immersed, then erumpent, depressed-globose, opening by a round or oblong pore, brown or black, 75–100 μ in diam.; spores filiform, straight or curved, nucleolate, hyaline, 30–40 \times 2.5–3 μ .

On old stems of *Gaura induta* Woot. & Standl. (14766). This may be the stem form of *Septoria gaurina* E. & K. Potebnia states (Ann. Mycol. 8: 65 et seq.) "es ist zweifellos das einige Rhabdospora-Arten mit den entsprechenden Septoria-Arten identisch sind."

PHLOEOSPORA OXYTROPIDIS Ell. & Gall.

On *Oxytropis Lambertii* Pursh (13802).

Order: MELANCONIALES

Family: MELANCONIACEAE

GLOEOSPORIUM POTENTILLAE (Desm.) Ouds.

On *Argentina anserina* (L.) Rydb. (13562) and *Argentina argentea* Rydb. (14076). The teratology of this fungus is considered by Dr. Ernst Voges (Zeit. f. Pflanzenkr. 21: 269. 1911).

Order: MONILIALES

Family: DEMATIACEAE

CLADOSPORIUM HERBARUM (Pers.) Lk.

On stems of *Lygodesmia juncea* (Pursh) Don. (14725), on *Agropyron Smithii* Rydb. (14301), on old stems of *Cheirinia* sp. (14187), on *Lactuca pulchella* (Pursh) DC. (14516), on *Sitanion*

longifolium J. G. Sm. (13577), on *Stanleyella Wrightii* (Gray) Rydb. (13516).

No. 14737, on *Machaeranthera Bigelowii* (Gray) Greene is the form of this species called (sec. Ferraris, Fl. Ital. Crypt. Fasc. 8: 331) *Dematium pullulans*. No. 13748 on *Koeleria cristata* (L.) Pers. is, probably, *var. cerealium* of Saccardo.

CLADOSPORIUM FASCICULATUM Corda

On old stems of *Juncus balticus* Willd. (14544).

POLYTHRINICUM TRIFOLII Kunze

On *Trifolium Fendleri* Greene (13331 and 14728).

FUSICLADIUM CERASI (Rabh.) Sacc.

On fruit of *Prunus americana* Marsh (14729).

MACROSPORIUM COMMUNE Rabh.

On dead stems of *Castilleja integra* Gray (14616).

CERCOSPORA MONTANA (Speg.) Sacc.

On *Epilobium adenocladon* (Hausskn.) Rydb. (14107).

Family: TUBERCULARIACEAE

TUBERCULARIA VULGARIS Tode

On dead branches of *Padus melanocarpa* (A. Nels.) Shafer (14777), and on branches of *Salix cordata Watsoni* Bebb (14775).

TRIMMATOSTROMA SALICIS Corda.

On branches of *Salix cordata Watsoni* Bebb (14773).

Family: STILBACEAE

Arthrobotryum (?) pestalozzioides Dearness & Fairman sp. nov.

Synnema monocephalous, seated in the cortex and rising through rifts of the thick epiderm, causing it to feel spiny as the

finger is passed over it, very variable in size but averaging in well developed examples nearly $.8 \times .25$ mm.; capitula black, shining, globose, averaging when dry 270μ in height and 300μ in width, swelling when moist to a globe 630μ in diam.; stem reddish-black, averaging 540μ in length and 230μ in thickness; conidia *Pestalozzia*-like, 3-septate, $20-26 \times 7-11 \mu$, $14-18 \mu$ between the outer septa, curved on one side, the two middle cells brown, often nucleate, upper one larger; end cells hyaline, lower rostrate, upper terminating in 3 filiform cilia, $25-50 \times 2 \mu$; on fasciculate acute conidiophores.

On dead stems of *Clematis ligusticifolia* Nutt. (13679).

This interesting form stands on unnamed ground between *Stilbum* and *Pestalozzia*. Its association on the same stems with *Ceriospora montaniensis* E. & E. and the similarity of the spores make it extremely probable that this is the conidial form of the last named species.

LYNDONVILLE,
NEW YORK.

NOTES AND BRIEF ARTICLES

Dr. Elias J. Durand, of the University of Missouri, has been appointed professor of botany in the University of Minnesota.

Dr. Helen M. Gilkey, of the University of California, has been appointed assistant professor of botany and curator of the herbarium in the Oregon Agricultural College, to succeed the late H. S. Hammon.

Professor Bethel, of Colorado, has been appointed a pathologist in the Office of Investigations in Forest Pathology.

Dr. L. M. Massey, of Cornell University, is now in extension work on the control of truck crop diseases in New Jersey, with headquarters at New Brunswick.

Mr. G. B. Ramsey, of the Maine Experiment Station, has been appointed extension pathologist in Maine, with headquarters at Orono.

Prof. A. H. Graves has been studying the problem of disease resistance in chestnut trees about New York City, in areas where the canker first appeared, and finds some very interesting things. His results, however, are not yet sufficiently complete for publication.

A double number of the *Journal of the Elisha Mitchell Scientific Society* for June, 1918, is devoted to the Lactarias of North Carolina by W. C. Coker. As usual, the descriptions are accompanied by very handsome plates. Fifty species are recognized for the state, of which the following are described as new: *L. Allardii*, *L. subtorminosus*, *L. furcatus*, *L. coleopteris*, *L. Curtisii*, *L. subplinthogalus*, and *L. lentus*.

Gautieria has been recently studied by S. M. Zeller and C. W. Dodge, and the American species treated in a recent issue of the *Annals of the Missouri Botanical Garden*. Five species are recognized, one from Indiana, *G. plumbea*, being described as new.

A canker of poplars and willows caused by *Cytospora chrysosperma* is described by W. H. Long in the *Journal of Agricultural Research* for May 6, 1918. The author states that this canker is serious and prevalent throughout the semi-arid regions of the southwestern United States. Methods of control include the use of resistant species, careful tillage, protection, and strict supervision over nursery stock.

Dr. F. C. Stewart, in Bulletin 448 of the New York Agricultural Experiment Station, fully describes and beautifully illustrates the appearance and habits of *Collybia velutipes*, an edible fungus remarkable for its ability to withstand cold. Dr. Stewart believes that it should be better known and more generally used for food, and he intimates that it may be possible to cultivate it.

Young plants of red cedar, and certain other species of ornamental conifers, have been subject recently to a disease which has caused great loss in a number of nurseries. This seems to be due to a species of *Phoma*, a microscopic parasitic fungus. Spraying has had little effect on controlling its attacks.

It is stated on good authority that nearly 100,000,000 bushels of wheat and oats are destroyed annually by grain smuts, which could easily be prevented by the simple and inexpensive formaldehyde treatment of seed. The tiny spores of the smut-fungus cling to the grains and germinate with them in the soil. Formaldehyde prevents the germination of the spores but does not affect the seed.

English walnuts are often attacked by *Armillaria* root-rot, which spreads from one tree to another through the soil. It has

been found that if the dirt is dug away until the graft unions are exposed and cylinders of heavy roofing paper placed around the base of the trees and the soil filled in, that the fungus is prevented from entering the walnut trunk.

The species of *Russula* found in the State of North Carolina have been treated by H. C. Beardslee in the *Journal of the Elisha Mitchell Scientific Society* for January, 1918. Many of the notes and photographs are by Dr. W. C. Coker. The style of treatment is the same as that of other papers on fleshy fungi appearing in this journal. Forty-seven species are recognized, among which the following are described as new: *R. cinerascens*, *R. magna*, and *R. pungens*.

A disease of narcissus which has been attributed to a species of *Fusarium*, a microscopic fungus, is now known to be due to a nematode. The disease appears first in the neck of the bulbs, causing the leaves at and below the soil to decay and fall over. The nematode may pass from the diseased parent bulb to an off-set but does not appear to pass from one bulb to another in storage. Rotation, trap-plants, heat, and spraying solutions are mentioned as preventative and remedial measures.

Bulletin 658 of the United States Department of Agriculture, by James R. Weir and E. E. Hubert, gives an outline of forest disease surveys, which are carried out in conjunction with timber survey projects in order to obtain data of economic value in conducting future sales of the areas in question. The results are recorded on pathological maps, indicating the principal infection areas. Several of the common fungous diseases affecting trees are described and illustrated in this bulletin.

Specimens of *Globifomes graveolens* were recently collected by Professor A. H. Graves on a living red oak trunk near New Dorp, Staten Island. This very curious and interesting tree-destroying fungus was first described from Georgia by Schweinitz and is of

rare occurrence on oak, beech, and maple as far north as Pennsylvania and as far west as Iowa. This is the first time it has been found within the local flora range.

A leaf blight of *Kalmia latifolia* is described by Ella Enlows in the *Journal of Agricultural Research* for April 15, 1918. This disease is characterized by blight or dry-rot involving large areas either of the leaf blade or of the entire leaf. It may even extend into the stems and eventually kill the entire plant. The fungus involved is described as a new species, *Phomopsis Kalmiae*. Several illustrations accompany the description.

To develop varieties of wheat that will resist black rust, the United States Department of Agriculture is working in cooperation with the state experiment stations of Minnesota, Kansas, Tennessee and Iowa. Rust-resistant durum wheats and other resistant varieties are being crossed on varieties known chiefly for their milling and bread-making qualities to obtain rust-resistant strains of good milling quality. Extensive milling and baking experiments have been made with a number of these hybrids.

The Office of Fruit Disease Investigations, Bureau of Plant Industry, has recently added the following pathological workers to its staff: for work in cooperation with the Bureau of Markets on the inspection of carload lots of fruits at terminal markets and the identification of diseases affecting such shipments, Dr. B. O. Dodge, formerly an instructor at Columbia University, Mr. H. D. Hendricks, of Anderson, Indiana, and Mr. John G. Hall; for work on the diseases of small fruits, Miss Grace A. Dunn, of Lake Erie College, Ohio, Mr. W. H. Sawyer, Jr., of Lewiston, Maine, and Mr. Arthur N. Wilcox, of Wisconsin University; for work on pecan diseases, Mr. J. B. Demaree, formerly with the State Board of Entomology of Indiana; and for general work on fruit diseases, Professor A. H. Chivers, formerly assistant professor of botany at Dartmouth College, New Hampshire.

An excellent and handsomely illustrated article on *Fomes officinalis*, by J. H. Faull, appeared in the *Transactions of the Royal Canadian Institute, Toronto*, volume XI. The history, distribution and hosts, chemistry, dissemination, and effect on timber are all fully treated. It produces a red heart-rot of conifers characterized by the removal of the cellulose, by the fracturing of the wood into rectangular masses, and the formation of mycelial sheets in the crevices, the effects being not unlike those caused by *Polyporus Schweinitzii*. It occurs on both living and dead timber and belongs to the group commonly regarded as wound parasites. The range of this species in America is reported by the author to be as follows: British Columbia, Ontario, Quebec, Arizona, California, Oregon, Washington, Montana, Nevada, Idaho, Wisconsin, Michigan, and Wyoming.

The Report of the State Botanist of New York for 1916, by Dr. H. D. House, formerly a student at the Garden, contains a number of articles of interest to botanists in general. In addition to the usual list of accessions and local flora notes, there is a long list of species of lower fungi, either new or interesting; a list of the fungi of Chautauqua County contributed by Dr. D. R. Sumstine; and a list of the flowering plants and ferns of the Oneida Lake region by Dr. H. D. House. One of the most interesting parts of this report is an ecological treatment by Dr. House of the vegetation of the eastern end of Oneida Lake, which is illustrated with very handsome photographs. *Coriolopsis rigida* is reported on dead limbs and trunks of poplar and the range of the species is said to extend northward to Essex County, New York, southern Ontario, and Wisconsin.

The Office of Cotton, Truck, and Forage Crop Disease Investigations, Bureau of Plant Industry, has recently appointed Mr. W. S. Porte, of Rutgers College, New Jersey, as scientific assistant in plant pathology, to assist in tomato spraying experiments; Mr. S. L. Dodd, Jr., formerly with the West Virginia State Crop Pest Commission and Agricultural Experiment Station, as extension pathologist in the state of West Virginia, with

headquarters at Morgantown; and Mr. G. M. Armstrong, instructor in plant pathology at Clemson College, South Carolina, as extension pathologist in the state of Alabama, with headquarters at Auburn. Mr. C. S. Ridgway, of the Bureau of Plant Industry, has been transferred from assistant in tobacco disease investigations to the position of extension pathologist in the state of Maryland, and Mr. D. C. Neal from the citrous disease investigations of the Bureau of Plant Industry to the leadership of the pathological extension work in Louisiana, with headquarters at Baton Rouge.

The campaign to eradicate the common barberry, which was started by the United States Department of Agriculture last spring, has already met with gratifying results. The common barberry harbors the black, or stem, rust of wheat, oats, barley, and rye, a disease which causes enormous losses in this country. In certain European countries it has been demonstrated that the eradication of the barberry has resulted in a marked decrease in the amount of damage caused by this disease. In central and northwestern states where the campaign is being conducted, public sentiment has been aroused. Nurserymen for the most part have agreed to discontinue distributing common barberry bushes. Park boards in many cities have eradicated them. State nursery inspectors and state entomologists are destroying the bushes wherever stem rust infection is found. Several state councils of defense have issued appeals for the eradication of this barberry, and the public safety commission of Minnesota has issued an order providing for compulsory eradication in that state. The Japanese barberry does not come under the ban, as it does not harbor the rust.

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Arthur, J. C. New species of Uredineae—X. Bull. Torrey Club **45**: 141-156. 1 My 1918.

New species are described in *Uromyces* (2), *Puccinia* (8), *Aecidium* (10), and *Uredo* (3).

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Twenty-four new species are described.

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